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A COLLECTION OF SMALL MAMMALS FROM
MOUNT COFFEE, LIBERIA.

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[FIGS. 39-43.]

IN 1897 Mr. R. P. Currie spent about fourteen weeks, February 1 to May 10, as the guest of the New York State Colonization Society, at Mount Coffee, Liberia, where he made extensive collections in the interest of the United States National Museum. Though principally occupied with entomology, he secured a collection of small mammals, which proves to be of particular interest. Only twenty-eight species are represented, but nine of these are additions to the known fauna of Liberia, and seven are new to science. That so large a proportion of forms new to the region should be included in the collection is especially remarkable, in view of the fact that Mount Coffee, situated on the St. Paul River, about twenty-five miles from Monrovia, is within the area covered by the explorations of Büttikofer, Sala, and Stampfli, who obtained no less than ninety species of mammals.¹

The country in which the Currie collection was made calls for no detailed description. Mount Coffee lies in a damp, densely forested region, and its elevation above sea level is only 400 or 500 feet.

A few of the specimens were obtained by Professor O. F. Cook, but when no collector's name is mentioned it is to be

¹ See Jentink, Notes from the Leyden Museum, x, pp. 1-58, 1888.

understood that they were taken by Mr. Currie, who is, in all cases, responsible for the native names and, unless the contrary is stated, for the measurements of the total length, tail vertebræ, and hind foot. I am much indebted to Mr. Wm. E. de Winton for aid in determining many of the rodents, and also for identification of most of the Cameroon material on which comparisons are based. Dr. F. A. Jentink has kindly compared a specimen of *Pipistrellus minusculus* with the type of *P. stamflii* in the Leyden Museum. This paper is published here by permission of the Secretary of the Smithsonian Institution.

FUNISCIURUS PYRRHOPUS LEUCOSTIGMA (Temminck).

1888. *Sciurus pyrrhopus* JENTINK, Notes from the Leyden Museum, x, p. 37.
 1890. *S[ciurus] pyrrhopus leucostigma* THOMAS, Proc. Zool. Soc. London, p. 447.

Native name, Buen-ben.

The seven specimens of this squirrel show practically no variation in color. A young individual, less than half grown, is duller than the adults, and the light stripes on its sides are paler. The skull of *Funisciurus pyrrhopus leucostigma* is smaller than that of *F. p. mystax* from the Benito River, Cameroon, the rostrum is less inflated in front of zygoma root, and the shaft of the articular process of the mandible is broader. Five adult males give the following measurements: Total length 348.6 (extremes 323-380); tail vertebræ 152 (124-175); hind foot with claw 45.7 (44.5-47); hind foot without claw 43.7 (43-44).

FUNISCIURUS POENSIS (A. Smith)?

1888. *Sciurus poensis* JENTINK, Notes from the Leyden Museum, x, p. 37.

One badly damaged skin with imperfect tail and no skull is the only representative of this animal in the collection. It was taken on March 3. As compared with three specimens of *F. poensis* from the Benito River, Cameroon, it differs in longer hind foot [38 (35.6) against 33.6 (31), 34 (31.4) and 34.6 (32), respectively] and more yellowish dorsal surface. The hairs of the back have the subterminal pale band a bright ochre yellow, while in the Cameroon specimen it is yellowish wood-brown. There is little probability that the Liberian animal is true *poensis*.

SCIURUS (HELIOSCIURUS) PUNCTATUS Temminck.

1888. *Sciurus punctatus* JENTINK, Notes from the Leyden Museum, x, p. 36.

Native name, Ten-deh.

An adult male was obtained on March 13. Measurements: total length 375; tail vertebrae 201; hind foot 45.7(40).

SCIURUS (HELIOSCIURUS) RUFOBRACTHIATUS

LIBERICUS subsp. nov.

1888. *Sciurus rufobrachiatus* JENTINK, Notes from the Leyden Museum, x, p. 36. Not of Waterhouse, 1842.

Native name, Bo-gongeh.

Type.—Adult male (skin and skull) no. 83834, U. S. National Museum. Collected at Mount Coffee, Liberia, Africa, March 22, 1897, by R. P. Currie. Original no. 16.

Characters.—Slightly larger than specimens of *Sciurus rufobrachiatus* from the Benito River, Cameroon; pelage less suffused with reddish, particularly on lower side of tail; skull decidedly larger, with heavier teeth and relatively larger, more elongate audital bullæ.

Color.—Dorsal surface of head, body, and limbs black, irregularly suffused with tawny and everywhere thickly and uniformly speckled with yellowish white. The fur of the back is composed of long coarse hairs and fine soft underfur. The coarse hairs are about 25 mm. in length and black throughout except for two yellow bands, each 1–2 mm. in width, one placed about 7 mm. from base, the other about 10 mm. from tip. The more distal band is slightly the narrower. It alone gives the speckled appearance to the fur, as the lower band is concealed when the hairs lie in natural position. On the sides the specks are buff (Ridgway, Pl. v, No. 13), but on the back, shoulders and head they are distinctly tinged with orange, producing a faintly marked dorsal area. Underfur about 15 mm. long, slaty black, ringed subterminally with orange buff. This buff appears irregularly at the surface, giving rise to a faint tawny suffusion. Belly scantily haired, shading to gray anteriorly, and merging posteriorly with the ochraceous rufous of inner sides of hind legs. The inner surface of the front legs is like that of the hind limbs, and on both this color is sharply contrasted with the speckled black outer surface. Feet black, finely speckled with ochraceous. Tail black, finely speckled with buff on basal third, both above and below; the terminal two-thirds with ten faintly defined gray cross bars and a narrower gray margin above, and uniformly grizzled with gray below; pencil wholly black.

Skull.—The skull of *Sciurus rufobrachiatus libericus* is longer and relatively narrower than in the Benito River form of the species. The nasal branch of the maxillary is extended behind that of the



FIG. 39.—*a* *Sciurus rufobrachiatus libericus*;
b *S. rufobrachiatus rufobrachiatus*.

premaxillary so as nearly to reach rim of orbit (fig. 39). Audital bullæ larger than in specimens from Cameroon, their antero-posterior

diameter relatively as well as actually much greater.

Teeth.—The teeth are slightly heavier than in the Benito River animal, but not otherwise different.

Measurements.—External measurements of type: total length 515; tail vertebræ 295; hind foot 60 (57).¹

Cranial measurements of type: greatest length 57.4 (53)²; basal length 49 (44); basilar length 46 (42); palatal length 24 (22); diastema 12.4 (10.6); length of nasals 18 (16); zygomatic breadth 32.6 (31); greatest breadth of braincase 24 (24); mastoid breadth 26 (26); greatest diameter of audital bulla 13.6 (11.6); maxillary molar series (alveoli) 11.4 (10.4); mandible 33 (30); mandibular molar series (alveoli) 11.4 (11).

Specimens examined.—One, the only specimen of this squirrel obtained.

Remarks.—The Liberian form of *Sciurus rufobrachiatus* appears to be well differentiated from the Cameroon race, and, therefore, presumably from that occurring on Fernando Po, the type locality of the species.

ELIOMYS NAGTGLASII (Jentink).

1888. *Graphiurus nagtglasii* JENTINK, Notes from the Leyden Museum, x, p. 38 (Du Queah River, Liberia).

Native name, See-see.

An adult male was taken on March 12. Measurements: total length 258; total vertebræ 103; hind foot 30 (28).

MUS ALEXANDRINUS Geoffroy.

Native name, Tun-daw.

One specimen, March 18.

¹ Three specimens from Benito River measure: total length 470, 490, and 500; tail vertebræ 230, 240, and 240; hind foot 54 (50), 55 (52) and 56 (52).

² Measurements in parenthesis are those of an adult skull of *Sciurus rufobrachiatus* from Benito River, Cameroon.

MUS RATTUS Linnæus.

Four adult black rats are in the collection. They give the following measurements: total length 342.6 (323-354); tail vertebrae 187 (171-200); hind foot with claws 31.1 (28.4-33.5); hind foot without claws 29.8 (27-32.6).

MUS DEFUA sp. nov.

Native name, Deh-foua.

Type.—Adult male (skin and skull) no. S3837, U. S. National Museum. Collected at Mount Coffee, Liberia, Africa, May 13, 1897. Original no. 53.

Characters.—Nearest *Mus rutilans* Peters, but with larger feet and ears, and more closely annulated tail; color duller throughout, *the hairs of under surface plumbeous at base*; pale area behind ear obsolete or absent; skull more slender than that of *Mus rutilans*, the teeth larger and antorbital foramen much narrower.

Fur.—The fur is soft and dense though rather short. It is composed of the usual three elements, underfur, grooved bristles, and long terete hairs. The bristles and long hairs are inconspicuous and except on the rump, where the latter are somewhat noticeable, both might readily pass unnoticed. At middle of back the bristles and underfur are about 10 mm. in length and the terete hairs 5 mm. longer.

Color.—Dorsal surface russet, clear on forehead, occiput, and nape, elsewhere slightly dulled and varied by the yellowish tips and dark brown subterminal bands of the longer coarser hairs. Sides dull cinnamon in faint contrast with back. Cheeks and face concolor with sides, the former clear, the latter strongly tinged with brown. Ventral surface ecru-drab, slightly washed with Isabella color and irregularly darkened by the slate-gray bases of the hairs. Feet and ears scantily clothed with very short russet hairs.

Feet.—Sole naked to heel, the surface without reticulation; plantar tubercles six, all well developed; thumb very small, its claw blunt.

Tail.—The tail is slender and closely annulated, the rings uniform and distinctly outlined. They show no clearly defined traces of scales. At middle of tail there are 16 rings to the centimeter. Numerous fine, inconspicuous hairs spring from the spaces between the rings, their length about $1\frac{1}{2}$ times width of rings. Near tip of tail the rings become irregular and much narrower, and the hairs increase in length though without forming a pencil.¹

¹ In *Mus rutilans* there are only 11 rings to the centimeter at middle of tail, and they are distinctly divided by cross furrows. The hairs are slightly longer

Skull.—In size and general appearance the skull of *Mus defua* closely agrees with that of *Mus rutilans*. The rostrum, however, is narrower, and the dorsal profile of the nasals is much less distinctly bent downward near middle. Antorbital foramen barely more than half as wide as in *Mus rutilans*, its contraction especially noticeable below middle. The depression which extends forward on side of rostrum from antorbital foramen above root of incisor is smaller and less well defined than in *Mus rutilans*. On the lower side of the skull a few slight differences may be seen, some of which may prove to be mere individual variation. The incisive foramina are narrower than in *Mus rutilans* though of about the same length. The interpterygoid space on the contrary is wider in the Liberian animal. Audital bullæ like those of *Mus rutilans* but slightly smaller. Mandible with narrower angular process and shorter coronoid process than in *Mus rutilans*.

Teeth.—Though the toothrow is no longer, the individual teeth of *Mus defua* are broader and heavier than those of *M. rutilans*. Aside from their difference in general form, the maxillary teeth of *Mus defua* are peculiar in the greater disproportion between the central and lateral tubercles; the former are actually larger than in *Mus rutilans* while the latter are smaller and less definite in outline, particularly those on outer side. First molar with two well-developed tubercles on inner side, slightly larger than the corresponding ones in *Mus rutilans* and more posterior in situation. On the outer side there is a minute anterior tubercle smaller and further forward than in *Mus rutilans*, and a median tubercle of about the same size as in the latter. The posterior outer tubercle, small but well developed in *Mus rutilans* is here reduced to a mere trace on the outer side of the third median tubercle. The arrangement of the tubercles in the other maxillary teeth and in those of the mandible is essentially as in *Mus rutilans*.

Measurements.—External measurements of type: total length 310; tail vertebræ 187.5; hind foot 26.7 (25); ear from meatus 16; ear from crown 12; width of ear 12.

Cranial measurements of type: greatest length 32; basal length 27; basilar length 24.4; palatal length 13.6; palatal width between anterior molars 2.8; diastema 8.8; length of incisive foramen 6.4; combined width of incisive foramina 2.4; length of nasals 11.6; greatest combined breadth of nasals 3; zygomatic breadth 16.8; mastoid breadth 12; interorbital breadth 5.2; breadth of braincase above relatively to the width of the rings, and therefore actually much longer than in *Mus defua*.

roots of zygomata 13; depth of braincase at front of basioccipital 8.8; fronto-palatal depth at posterior extremity of nasals 6.6; least depth of rostrum behind incisors 5.6; maxillary toothrow (alveoli) 6; breadth of first upper molar 1.8; mandible 18; mandibular toothrow (alveoli) 5.8.

Specimens examined.—One, the only specimen of *Mus defua* obtained.

Remarks.—*Mus defua* is so readily distinguished from *M. rutilans* that no special comparison is necessary. Its most obvious characters are the more closely annulated tail, plumbeous underfur of belly, and narrow antorbital foramen.

MUS ERYTHROLEUCUS Temminck.

Native name, Deh-foua.

The single specimen in the collection has been determined by Mr. Wm. E. de Winton. It was taken on March 30. Measurements: total length 204; tail vertebræ 96; hind foot 23.4 (22).

MUS TULLBERGI ROSTRATUS subsp. nov.

Native name, Deh-foua.

Type.—Adult male (skin and skull) no. 83836, U. S. National Museum. Collected at Mount Coffee, Liberia, May 7, 1897. Original no. 60.

Characters.—Slightly larger than *Mus tullbergi tullbergi*, but similar in color. Skull with heavier rostrum and mandible than in the typical subspecies.

Fur.—The fur is dense and soft, that on the middle of back about 9 mm. in length. It is composed almost exclusively of soft hairs of uniform length, though a few longer ones are interspersed, especially on flanks. There are no bristles.

Color.—As in true *Mus tullbergi* there are two color phases, characterized respectively by the predominance of red and brown. In the type (brown phase) the sides, cheeks, and flanks are yellowish wood-brown, slightly sprinkled with dark-tipped hairs. These hairs become more numerous on back, where they form a fairly well defined seal-brown dorsal area, faintly intermixed with color of sides. The seal-brown is clearest and darkest behind shoulders, between and in front of which it is much lightened by wood-brown. Face like back, but sprinkled with gray. Ventral surface dull white, sharply defined, the plumbeous bases of the hairs appearing irregularly at the surface. Feet

clothed with very short reddish hairs. Ears dark brown, sprinkled with almost microscopic hairs. Tail dark uniform brown throughout.

In the red phase the back and sides are russet, the former slightly duller near median line, but without trace of seal-brown. Forehead and face darker than back. Otherwise as in brown phase.

Feet.—The soles are entirely naked, and without reticulation. Plantar tubercles six, all well developed; thumb minute, its claw blunt.

Tail.—The tail is slender and moderately long, closely and distinctly annulated. At middle there are 17 rings to the centimeter. Each ring is divided by transverse furrows into scales slightly longer than broad. The scales are very conspicuous, and so arranged that those of contiguous rings form a noticeable quincunx. The few hairs that spring from the spaces between the rings are short and inconspicuous, in length scarcely exceeding width of rings. At tip the rings become crowded and indistinct, and the hairs slightly longer.

Skull.—The skull of *Mus tullbergi rostratus* is larger than that of the typical subspecies, the rostrum is proportionally larger and heavier, and the posterior portion of the mandible is deeper.

Teeth.—The teeth are as in the typical form.

Measurements.—External measurements of type: total length 266; tail vertebræ 145.6; hind foot 28.9 (27); ear from meatus 16.4; ear from crown 13; width of ear 11.6. Three topotypes average: total length 254 (240–266); tail vertebræ 136 (126–145); hind foot 27 (26–28.9); hind foot without claw 26 (25–27).

Cranial measurements of type: greatest length 33.4 (32);¹ basal length 28 (26.4); basilar length 26 (25.4); palatal length 14.6 (14); palatal width between anterior molars 3 (3); diastema 9.6 (9); length of incisive foramen 7 (6.4); combined width of incisive foramina 2 (2); length of nasals 12.2 (11.8); combined breadth of nasals 3 (3.6); zygomatic breadth 15 (14); mastoid breadth 12.2 (11); interorbital breadth 4.6 (5); breadth of braincase above roots of zygomata 12.6 (12); depth of braincase at front of basioccipital 8.8 (7.6); frontopalatal depth at posterior extremity of nasals 7 (6.4); least depth of rostrum behind incisors 5.6 (5); maxillary toothrow (alveoli) 5 (5); breadth of first upper molar 1.6 (1.6); mandible 18 (18); mandibular toothrow (alveoli) 5 (4.8).

Specimens examined.—Nine, all taken between April 1 and May 7. Four of these are in the brown phase.

¹ Measurements in parentheses are those of a much older skull of typical *M. ullbergi* from Benito River, Cameroon.

DASYMYS RUFULUS sp. nov.

Type.—Adult male (skin and skull) no. 83844, U. S. National Museum. Collected at Mount Coffee, Liberia, Africa, March 30, 1897.

Characters.—Plantar tubercles five as in *D. incomptus* and *D. bentleyæ*. Color much paler than in either of these, the dorsal area very slightly darker than sides and *suffused with red*. In size about equal to *D. bentleyæ*, but tail shorter, the proportions thus more nearly as in *D. incomptus*. Skull smaller than that of *D. incomptus*, the zygomatic width relatively less, the audital bullæ relatively smaller, and teeth, especially the incisors, less robust.

Fur.—The fur is fine but harsh, though without bristles. It consists of soft underfur and coarse somewhat iridescent hairs, the longer of which (about 20 mm. in length) are grooved, as may be seen on examination with a lens. Throughout the pelage the color zones on the individual hairs fade gradually into each other. On both back and belly the grooved hairs are light colored at base in contrast with the dark underfur through which they pass.

Color.—General color of dorsal surface wood-brown or clay color, finely though not conspicuously grizzled by darker and lighter hair tips, and dulled by appearance at surface of gray (Ridgway, pl. 11, no. 7) underfur. Throughout the dorsal area there is a distinct suffusion of red, somewhat variable according to light, but always noticeable on crown, shoulders, flanks, and about base of tail. The color of the back fades insensibly into dull grizzled ochraceous-buff on sides, and this into dull cream-buff on belly, where the dark bases of the hairs produce irregular and noticeable clouding. Muzzle and face hair-brown in rather marked contrast with crown and cheeks. Ears closely furred with short, dull brown hairs. Feet an indefinite hair brown. Tail dark brown above, faintly lighter below, but not bicolor.

Feet.—The feet are broad and strong, with toes of normal proportions. Soles with five tubercles, the hindermost of which is largest.

Tail.—The rather stout tail is distinctly and regularly annulated, the rings not obscured by hair. At middle there are ten rings to the centimeter. Each ring is divided into fairly well defined rectangular sections or scales *slightly broader than long*. In length the numerous fine hairs that spring from between the rings are about equal to width of two rings. At tip the rings become narrower and less definite and the hairs longer, but without forming a pencil.

Skull.—As compared with that of *D. incomptus* the skull of

Dasymys rufulus (fig. 40) differs chiefly in its smaller size, narrower rostrum, shorter broader interorbital region, narrower antorbital foramen, shorter nasals, and smaller audital bullæ. Antorbital foramen

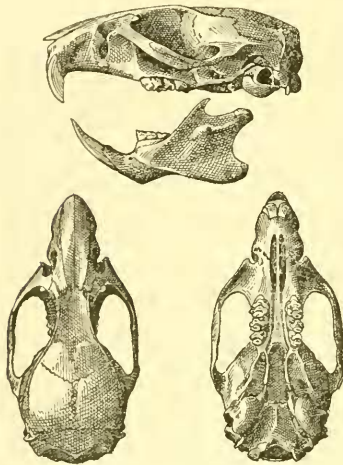


FIG. 40. *Dasymys rufulus*. Type.
Natural size.

narrower than in *D. incomptus*, the distance from its upper posterior margin to the elevation on side of rostrum marking root of incisor relatively much less. Plate forming outer wall of foramen relatively wider than in *D. incomptus*, its anterior border concave below, abruptly convex above, but this convexity never forming a pointed hook as in the only specimen of *D. incomptus* at hand. Posterior extremity of nasals in line with center of lachrymals, thus falling short of tips of nasal branches of premaxillaries by about 1.5 mm. In *D. incomptus* the nasals extend back to extremity of premaxillaries. Bony palate

very narrow, its width about equal to that of first upper molar. It is traversed by two deep longitudinal grooves. Pterygoids straight, slightly convergent posteriorly. Audital bullæ relatively smaller and more globular than in *D. incomptus*. Mandible less robust than that of *D. incomptus*, the coronoid process shorter (rising scarcely above tip of articular process) and articular process much narrower.

Teeth.—The teeth are exactly as in *D. incomptus*, except that all are distinctly less robust. Anterior face of incisors paler orange than in *D. incomptus*.

Measurements.—External measurements of type: total length 302; tail vertebræ 151; hind foot 35 (32); ear from meatus 16.5; ear from crown 13; width of ear 17. Average of four specimens from the type locality: total length 306.5 (302–316); tail vertebræ 153 (151–156); hind foot 34 (33–35); hind foot without claw 30.4 (29–32).

Cranial measurements of type: greatest length 35 (37);¹ basal length 32 (34); basilar length 30 (32); palatal length 16.8 (18.4); palatal width between anterior molars 2.2 (2.4); diastema 10 (11.4);

¹ Measurements in parentheses are those of an adult *D. incomptus* from Port Natal (topotype of *D. gucinzii*).

length of incisive foramen 7.4 (8.4); combined width of incisive foramina 2 (2.2); length of nasals 13 (14.4); combined breadth of nasals 4 (4); zygomatic breadth 17 (19); mastoid breadth 13.6 (13.8); interorbital breadth 4.6 (4.6); breadth of braincase above roots of zygomata 13.8 (14); depth of braincase at front of basioccipital 10.8 (10.6); frontopalatal depth at posterior extremity of nasals 9 (10); least depth of rostrum behind incisors 6.4 (6); maxillary toothrow (alveoli) 7.4 (8); breadth of first upper molar 2.2 (2.8); mandible 20.4 (22); mandibular toothrow (alveoli) 7 (8).²

Specimens examined.—Six, all from the type locality.

Remarks.—*Dasymys rufulus* differs so widely from the large, dark *D. incomptus* as to need no special comparison. It apparently more closely resembles *D. bentleyæ*, a species which I have not seen, though readily distinguishable by its shorter tail and smaller ears. In color *D. bentleyæ* is merely said to resemble Peters' plate of *Dasymys gueinzii*, a statement sufficiently vague to cover much specific variation. The plate, however, shows no trace of the red suffusion of the dorsal surface so conspicuous in *D. rufulus*.

LEGGADA MUSCULOIDES (Temminck).

1888. *Mus musculoides* JENTINK, Notes from the Leyden Museum, x, p. 44.

The collection contains two specimens, an adult female and a half-grown young. The former measures: total length 105; tail vertebræ 46; hind foot 13.8 (13); ear from meatus 9; ear from crown 7.4; width of ear 8.

ARVICANTHIS PULCHELLUS (Gray).

1888. *Mus barbarus* JENTINK, Notes from the Leyden Museum, x, p. 44.

Mr. Currie secured four individuals of this species, three adults and one young. The adults give the following average and extreme measurements: Total length 256 (244-268); tail vertebræ 129 (126-134); hind foot 28.1 (27-29); hind foot without claws 26.3 (25-28).

ARVICANTHIS PLANIFRONS sp. nov.

Type.—Adult male (skin and skull) no. 83814, U. S. National Museum. Collected at Mount Coffee, Liberia, Africa, April 26, 1897.

Characters.—Similar externally to *Arvicanthis univittatus* (Pe-

²Some of the cranial measurements of *D. bentleyæ* given in the original description are: basal length 31.5; greatest breadth 18; nasal length 13.8; interorbital breadth 4; palatal length 19.6; diastema 10.3; palatine foramina 8.1; length of upper molar series 6.5.

ters). Skull narrower than that of *A. univittatus*, the dorsal profile essentially straight from tip of nasals to middle of proencephalon.

Fur.—The fur is rather coarse and harsh, but without bristles or noticeable lengthened hairs. On middle of back it is about 8 mm. in length.

Color.—Face, cheeks, back, and sides uniform dull orange-rufous, slightly darkened by a uniform admixture of black-tipped hairs; these a little less noticeable on sides. A black line, 3 mm. wide, extends from nape to rump. Ventral surface buff (slightly yellower than Ridgway, pl. v, no. 13), fading to dirty white on throat, chin, lips, and inner side of front legs, and deepening to ochraceous in anal region and on inner side of hind legs. Hind feet thinly coated with short ochraceous hairs. Front feet dull brown. Tail and ears uniform dark brown.

Feet.—The feet present no characters of importance. Soles with five well-developed tubercles and apparently a rudimentary sixth. Palms 6-tuberculate. Thumb very small, its nail blunt.

Tail.—The tail is moderately long and rather thick, its annulation distinct. At middle there are 15 rings to the centimeter. The individual rings are somewhat irregular in outline at free border, but are not distinctly broken up into scales as in *Mus tullbergi*. From between the rings spring numerous black stiff hairs, the length of which is slightly greater than width of rings. Toward tip the rings become confused and crowded, but the hairs undergo no change.

Skull.—The skull of *Arvicanthis planifrons* (fig. 41) differs from that of *A. univittatus* in many important characters. In general it is more slender than the latter, though the ridges are equally well developed. The most striking peculiarities are to be found in the anterior half of the skull. The whole region in front of the interorbital constriction is reduced in both width and depth, and as this lessening most affects the region between anterior bases of zygomata a conspicuous change in the profile of the skull results. In *A. univittatus* the dorsal outline curves almost continuously (though it is nearly straight over front half of nasals) from front to back, the convexity slightly more abrupt at front of orbits and over mesencephalon. In *A. planifrons* it is essentially straight from anterior extremity of nasals to

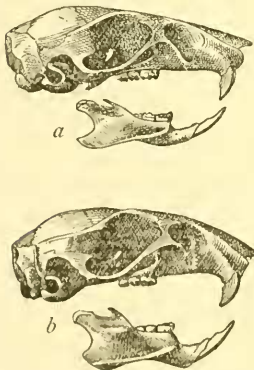


FIG. 41. *a* *Arvicanthis planifrons*; *b* *A. univittatus*. Slightly reduced.

more abrupt at front of orbits and over mesencephalon. In *A. planifrons* it is essentially straight from anterior extremity of nasals to

middle of proencephalon. Ratio of depth of rostrum at posterior extremity of nasals to basilar length 36.8 in *A. univittatus*, 28 in *A. planifrons*. Antorbital foramen narrower than in *A. univittatus*, the difference similar to that between *Mus defua* and *M. rutilans*, though less. Plate of maxillary forming outer wall of antorbital foramen narrow, its anterior margin sloping gradually upward and backward, its width at middle 3 mm. In *A. univittatus* the anterior margin rises vertically to slightly above middle and then bends abruptly backward, forming a conspicuous angle. The width at middle is about 4 mm. Incisive foramina shorter and wider than in *A. univittatus*, the median septum *very widely expanded* at level above (dorsal to) palatal surface. Audital bullæ larger than in *A. univittatus*, but not essentially different in form. Mandible much more slender than that of *A. univittatus*, especially the posterior portion.

Teeth.—The teeth are broader than those of *A. univittatus*, but I can detect no difference in the enamel folds.

Measurements.—External measurements of type¹: total length 231; tail vertebræ 98; hind foot 30 (27.6); ear from meatus 14.8; ear from crown 10; width of ear 12.8.

Cranial measurements of type: greatest length 34 (33.6)²; basal length 28 (27.6); palatal length 14 (14.4); palatal width between anterior molars 3.8 (4.2); diastema 8.6 (8.4); length of incisive foramen 5.6 (6.4); combined width of incisive foramina 3.8 (2.4); length of nasals 13.6 (13); combined breadth of nasals 4.2 (4); zygomatic breadth 15 (16.6); mastoid breadth 11 (13); interorbital breadth 6.4 (6.4); breadth of braincase above roots of zygomatics 14 (15); depth of braincase at front of basioccipital 10 (9.6); fronto-palatal depth at posterior extremity of nasals 7 (9.2); least depth of rostrum behind incisors 5.4 (6); maxillary toothrow (alveoli) 5.8 (5.8); breadth of first upper molar 2 (2.4); mandible 17.6 (18.4); mandibular toothrow (alveoli) 5.4 (6).

Specimens examined.—Two, both from the type locality; one not fully adult.

Remarks.—The external similarity of this animal to *Arvicanthis univittatus* forms a striking contrast to the distinctness of its cranial characters. These are as marked in the immature individual as in the adult.

¹ Three specimens of *A. univittatus* from Benito River, Cameroon, average: total length 242; total vertebræ 105; hind foot 30 (28).

² Measurements in parenthesis are those of a somewhat older individual of *A. univittatus* from Benito River.

MALACOMYS sp.

A specimen less than half grown, and therefore too young for satisfactory determination, is the only representative of this species in the collection. It has six plantar tubercles, all well developed.

LOPHUROMYS SIKAPUSI (Temminck).

1888. *Lophuromys sikapusi* JENTINK, Notes from the Leyden Museum, x, p. 42.

Native name, Tō-sivē.

The two specimens of this mouse measure respectively: total length 187; tail vertebræ 70; hind foot 23.3 (21); and total length 204, tail vertebræ 68.7; hind foot 24 (22). Both are females.

CRICETOMYS GAMBIANUS Waterhouse.

1888. *Cricetomys gambianus* JENTINK, Notes from the Leyden Museum, x, p. 42.

Mr. Currie secured only one specimen.

HERPESTES GALERA (Erxleben).

1888. *Herpestes pluto* JENTINK, Notes from the Leyden Museum, x, p. 16.

Represented by a skull with imperfect dentition.

CROCIDURA SCHWEITZERI Peters.

1888. *Crocidura schweitzeri* JENTINK, Notes from the Leyden Museum, x, p. 46.

An adult male and an immature individual of the same sex were taken on April 16 and 18 respectively. They agree very closely with the characters given by Peters in the original description of the species. The measurements of the adult are as follows: total length 133; head and body 72.4; tail vertebræ 53; hind foot 15 (14); ear from meatus 8; ear from crown 5.

CROCIDURA STAMPFLII Jentink.

1888. *Crocidura stampflii* JENTINK, Notes from the Leyden Museum, x, p. 47.

Three specimens, taken April 23, May 3, and May 4 respectively. Their measurements are as follows: No. 83805, ♀ ad., total length 110; tail vertebræ 43; hind foot 13 (12); ear from meatus 7; ear from crown 4.5. No. 83806, ♂ ad., total length 120; tail vertebræ 47; hind foot 14.6 (12.4); ear from meatus 8.6; ear from crown 4. No. 83808, ♀ ad., total length 114; tail vertebræ 43; hind foot 13 (12).

MYOSOREX MURICAUDA sp. nov.

Native name, Dē-wā.

Type.—Adult male (in alcohol) no. 83809, U. S. National Museum. Collected at Mount Coffee, Liberia, Africa, April 5, 1897. Original no. 32.

Characters.—Slightly smaller and of more slender form than *Sorex araneus*; tail longer than head and body; unicuspid teeth $\frac{3-3}{2-2}$; color slaty brown above, smoky gray beneath.

Color.—After nearly three years' immersion in alcohol the type specimen is uniform slate-gray above, faintly tinged with sepia across shoulders and middle of back. Underparts whitish smoke-gray. The fur is everywhere plumbeous at base. Feet dull white.

Feet.—The feet are slender, scantily clothed with fine white hairs on dorsal surface, the soles and palms naked, each with six tubercles.

Tail.—Tail slender and distinctly four-sided. Its diameter near base is only 2 mm., a width that it maintains without perceptible diminution to within about 20 mm. of tip. It is without trace of scales or annulation, scantily clothed with almost microscopic hairs, and very inconspicuously sprinkled with minute bristles 2 to 3 millimeters in length, visible on close scrutiny only.

Skull.—The skull of *Myosorex muricauda* (fig. 42) is slender and lightly built, much like that of *Sorex araneus* though smaller and less robust. Under surface of basioccipital forming a distinct angle with that of basisphenoid, not continuous with it as in the Liberian species of *Crocidura*. Tympanic rings nearly circular and actually larger than in *Crocidura schweitzeri* or *Sorex araneus*.

Teeth.—Anterior upper incisor with large posterior cusp, the point of which is level with tips of smaller unicuspid teeth. First unicuspid nearly double the height of second and third, its alveolar length slightly greater than height at middle. Second and third unicuspids when viewed from side subequal and about one-half as large as first. Viewed from above (skull held upside down) the third appears much larger than the second, owing to the postero-internal expansion

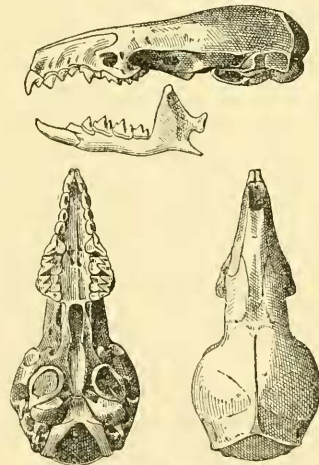


FIG. 42. *Myosorex muricauda*. Type. $\times 2$.

of its crown. The third unicuspid and large premolar are almost in contact. Large premolar well developed, its protocone minute. Cingulum cusp low, broad and ill defined. Posterior border of tooth deeply emarginate. First and second molars subequal in size, the second slightly narrower than first. Both are deeply emarginate posteriorly. Hypocone distinct but very small, about equal to protocone of large premolar. Lower incisor long and slender and although quite unworn barely turned upward at tip. The posterior border of its cingulum extends slightly behind middle of first unicuspid. Lower unicuspid essentially as in Dobson's figure of *Myosorex johnstoni* (Proc. Zool. Soc. London, 1887, p. 577).

Measurements.—External measurements of type: total length 120; head and body 58; tail 62; hind foot 12.4 (11.8); ear from meatus 8.5; ear from crown 5.

Cranial measurements of type: greatest length (exclusive of incisors) 18; palatal length 7.4; width of palate between middle molars 2.2.; distance between outer edges of alveoli of second molars 5; breadth of braincase 8.4; mandible (without incisor) 9.8; maxillary tooththrow 8.4; mandibular tooththrow 7.8.

Specimen examined.—One, the type.

Remarks.—In its long tail *Myosorex muricauda* differs from all the previously known members of the genus except *M. sorella* Thomas. From this species as well as from the short-tailed forms it is distinguishable by the reduced number of upper unicuspid teeth.

EPOMOPHORUS FRANQUETI Tomes.

1888. *Epomophorus franqueti* JENTINK, Notes from the Leyden Museum, x, p. 50.

Native name, Soon.

One specimen of this bat was taken on March 1, 1897.

MEGALOGLOSSUS WOERMANNI Pagenstecher.

1888. *Megaloglossus woermanni* JENTINK, Notes from the Leyden Museum, x, p. 53.

Two specimens, adult male and female, February 23, 1897.

External measurements: head and body, ♂ 65, ♀ 68; tibia, ♂ 18, ♀ 16.4; foot, ♂ 10 (9), ♀ 11 (9); forearm, ♂ 42, ♀ 42; first digit, ♂ 56, ♀ 57; second digit, ♂ 30, ♀ 31; third digit, ♂ 75, ♀ 76; fourth digit, ♂ 59, ♀ 61; fifth digit, ♂ 56, ♀ 57; ear from meatus, ♀ 15.4, ♀ 14.6; ear from crown, ♂ 14, ♀ 14; width of ear, ♂ 11, ♀ 12.

Cranial measurements of adult female: greatest length 25.4; basal length 24; basilar length 22.4; palatal length 13.4; zygomatic breadth 13; interorbital breadth 4; breadth across postorbital processes 9.4; greatest breadth of braincase 11; mastoid breadth 9.4; upper tooth-row (exclusive of incisors) 9; mandible 20; mandibular toothrow (exclusive of incisors) 10.

HIPPOSIDEROS CAFFRA (Sundvall).

Five specimens, all males, March 27 to April 22, 1897. Although apparently representing a single species these specimens show remarkable variation in size. In two the forearm measures 52 mm., in two others 49, while in the fifth it barely reaches 42.

PIPISTRELLUS MINUSCULUS sp. nov.

Type.—Adult female (in alcohol) no. 84500 U. S. National Museum. Mount Coffee, Liberia, May, 1894. O. F. Cook, collector.

Characters.—Similar to *Pipistrellus stampflii* (Jentink), but smaller, the tail relatively longer and color "more reddish brown."

Ears.—The ears are rather short; laid forward they extend to extremity of muzzle. Anterior margin of conch abruptly convex at base, then slightly convex to narrowly rounded tip. Posterior border faintly concave to middle, then somewhat more strongly convex to deep notch separating antitragus from rest of ear. Antitragus small but sharply defined, subquadrate in outline, its height nearly equal to its width. Inner surface of conch with five or six ill-defined cross ridges.

Tragus blunt, slightly curved forward, broader above than at base.

Membranes.—The membranes are very thin and delicate. Wings from base of toes. Free border of uropatagium longer than calcar.

Feet.—The feet are short, scarcely one-half as long as tibiæ. Calcar nearly double as long as foot, terminating in a distinct lobe, and noticeably keeled posteriorly.

Fur.—Fur short, that on middle of back about 5 mm. in length. It is closely confined to body, barely extending on membranes except as a thin sprinkling of scattered hairs.

Color.—Dorsal surface raw umber, slightly more yellowish posteriorly than anteriorly. Ventral surface yellowish wood-brown, in pubic region tinged with gray. The hairs are everywhere slaty black through basal half or more. Ears and membranes blackish brown,

the wings and uropatagium with a very narrow pale border along free edge.

Skull.—The skull of *Pipistrellus minusculus* (fig. 43b), which I am unable to compare with that of *P. stampflii*, is considerably smaller than that of the European *P. pipistrellus* (fig. 43a). The reduction in

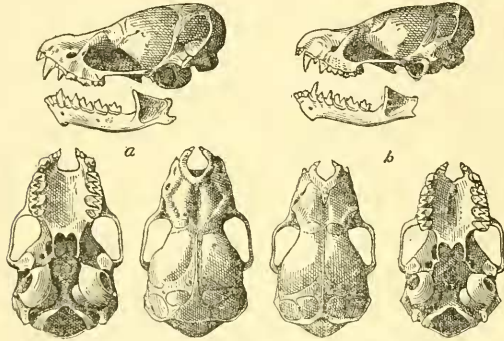


FIG. 43. a *Pipistrellus pipistrellus* ;
b *P. minusculus* $\times 2$.

size is chiefly due to shortening of the rostrum and flattening of the braincase, but, aside from the general difference in size and form, there are no very striking characters to distinguish the skull of the African animal. The premaxillaries in *P. minusculus* are more abruptly bent downward than in *P.*

pipistrellus, the anterior nares thus appearing to open more distinctly forward and less upward. Interpterygoid space *slightly broader than long*. Audital bullæ relatively smaller than in *P. pipistrellus* and space between them actually as well as relatively greater.

Teeth.—The teeth are essentially as in *P. pipistrellus*, though much smaller. Crown of middle upper, molar narrower and with more narrowly conical protocone. Hypocone of first and second molars minute but distinct. The mandibular teeth present no peculiarities.

Measurements.—External measurements of type: total length 70; tail vertebræ 31; tibia 9.4; foot 5.4; calcar 9; forearm 26.6; thumb 4.8; second digit 23; third digit 45; fourth digit 40; fifth digit 35; ear from meatus 8; ear from crown 7; width of ear 7; tragus 4.4.

Cranial measurements of type: greatest length 11; basal length 10; basilar length 8; median palatal length 4.6; lachrymal breadth 4.8; least interorbital breadth 3.2; zygomatic breadth 7; mastoid breadth 6.2; occipital depth 3.6; upper toothrow (exclusive of incisors) 4; mandible 7.4; mandibular toothrow (exclusive of incisors) 4.

Specimens examined.—Three, all from the type locality.

Remarks.—I should hesitate to separate this species from *Pipistrellus stampflii* had not Dr. Jentink made comparison of one of the Mount Coffee specimens with the type of the latter. After pointing out an

error in the original description of *P. stampflii* in which the length of forearm is recorded as 32 mm. instead of 27 mm., he continues (in letter under date of April 22, 1900): "your Liberian bat is still smaller [than *P. stampflii*], but its tail is longer. I think it is a new species, particularly as it is much browner-red colored than *stampflii*. As far as I can see the dentition is the same, though all the teeth appear to be smaller." The more important measurements of the type of *Pipistrellus stampflii* are: total length 62; tail vertebræ 24; forearm 27.

VESPERTILIO TENUIPENNIS (Peters).

1888. *Vesperus tenuipennis* JENTINK, Notes from the Leyden Museum, x, p. 54.

The collection includes an adult female of this bat collected by Professor Cook on the St. Paul River.

GALAGO DEMIDOFFII Fischer.

1888. *Galago demidoffii* JENTINK, Notes from the Leyden Museum, x, p. 14.

One very young individual.

CERCOPITHECUS sp.

A skull of some species of *Cercopithecus* was obtained by Mr. Currie.